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in every direction, so as to produce an almost perfect spindle. So far as we can discover, there are no microscopic differences between this form and the globose type, either in the spores or peridial cells, both showing the same characters and the same variations. The difference in the gall, however, is so marked and so constant, and the parasite on both pines is so common, that the shape of the gall often serves as a ready means of identifying the trees at a glance. Occasionally larger trunks will be affected, and then the gall retains its typical elongate character instead of the rounded convex forms that appear on *Pinus echinata* in the South, and that we have seen on *Pinus rigida* as far north as Massachusetts. The occurrence of such marked macroscopic characters opens up an interesting question as to how much weight should attach to what may be called "habit characters." Shall they be disregarded, shall they be recognized as varietal differences, or shall they serve as specific characters of equal weight with those which require a microscope to detect? We have provisionally adopted the first course in the present case.

AUBURN, ALABAMA, July, 1896.

Studies in the Botany of the southeastern United States—VII.

By JOHN K. SMALL.

RUMEX LANGLOISII n. sp.

Perennial, glabrous, somewhat scurfy, dark green (when dry). Stem erect or ascending, 5–7 dm. tall, simple or with a few nearly erect branches, more or less flexuous, at length strongly furrowed; leaves oblong or linear-oblong, 3–12 cm. long, acuminate or acutish, erose crenulate, slightly crisped, somewhat prominently nerved especially beneath, narrowed into a petiole which is usually 1 or 2 cm. long; ocreae very thin, early falling away; panicle rather open, not leafy, 1–2 dm. long; racemes strongly ascending, 5–10 cm. long, usually interrupted; flowers about 2 mm. long, in dense whorls (in fruit); pedicels about 5 mm. long, articulated near the base, enlarged towards the end; wings rather coriaceous, deltoid, 4 mm. long, the sides rounded, the apex blunt, the surface prominently nerved, each bearing a papillose calosity 1 mm. broad and 3 mm. long; achene ovoid, nearly 3 mm. long, abruptly contracted into a very short base, slightly acuminate at the apex, the faces dark red, the angles slightly paler and margined.

Southern Louisiana, New Orleans (Joor, according to Trelease) and Pointe a la Hache (Langlois).

This is *Rumex Floridanus* Trelease, but not *R. Floridanus* Meisner. With the original specimens of *R. Floridanus* Meisner at hand I cannot separate them from *R. verticillatus*, to which Meisner says the species is closely related. Prof. Trelease has given the plant its correct position, but referred it to the wrong species. *R. Langloisii* is intermediate between *R. verticillatus* and *R. altissimus* in these respects: its inflorescence suggests the latter, while its foliage suggests that of the former.

POLYGONELLA Michx. Fl. Bor. Am. 2: 240. 1803.

[LYONIA Raf. Med. Repos. N. Y. 5: 352. 1808.]

[STOPINACA Raf. Fl. Tellur. 3: 11. 1836.]

[GONOPYRUM F. & M.; C. A. Meyer, Mem. Acad. St. Petersburg. (VI.) 4: 144. 1840.]

Key to the Species.

Flowers polygamo-dioecious; filaments subulate or filiform, nearly alike or some slightly dilated at base; embryo axial

Ocreae fringed with a few bristle-like cilia.

1. *P. ciliata*.

Ocreae naked.

Leaves 1-5 mm. broad.

Achenes rhomboidal; leaves filiform-subulate.

2. *P. brachystachya*.

Achenes ovoid or oblong-ovoid; leaves wedge-shaped or spatulate.

Stems branched above; outer calyx-segments not reflexed.

3. *P. gracilis*.

Stems diffusely branched at the base; outer calyx-segments reflexed.

4. *P. polygama*.

Leaves 5-25 mm. broad.

5. *P. macrophylla*.

Flowers perfect; filaments dissimilar, the inner conspicuously dilated; embryo near one of the faces of the endosperm.

Annual; outer calyx-segments not reflexed, the inner not becoming conspicuously larger than the outer.

6. *P. articulata*.

Perennial; outer calyx segments reflexed; the inner developing large wings.

7. *P. Americana*.

1. POLYGONELLA CILIATA Meisn. in DC. Prodr. 14: 81. 1856.

Vicinity of the Manatee river, Florida.

As late as the year 1894 there seems to have been only one collection of the above species; this was Rugel's 429, on which

Meisner based the species. In August, 1895, Mr. Nash collected specimens at Palmetto, Manatee county, Florida (no. 2429). This second station is in the vicinity of the original station. The geographic range of *Polygonella ciliata* seems to be very restricted.

2. POLYGONELLA BRACHYSTACHYA Meisn. in DC. Prodr. 14: 80. 1856.

Polygonella Croomii Chapm. Fl. S. States, 387. 1860.

As far as I can see, these two species must be united. Having the types of both at hand I cannot find any distinctive characters and in addition the labels show that *Polygonella Croomii* is from "South Florida," and not from "Carolina or Georgia," as Dr. Chapman records in the Flora of the Southern United States.

3. POLYGONELLA GRACILIS (Nutt.) Meisn. in DC. Prodr. 14: 80. 1856.

Polygonum gracile Nutt. Gen. 1: 256. 1818.

Polygonum setaceum Nutt.; Meisn. in DC. Prodr. 14: 80. 1856.
Sand hills, South Carolina to Florida and Louisiana.

4. POLYGONELLA POLYGAMA (Vent.) A. Gray, Bost. Journ. Nat. Hist. 5: 231. 1847.

Polygonum polygamum Vent. Hort. Cels, pl. 65. 1800.

Polygonella parviflora Michx. Fl. Bor. Am. 2: 241. 1803.

Atraphaxis dioica Bosc; Meisn. in DC. Prodr. 14: 80. 1856.

- Polygonella parvifolia* var. *subnervis* Meisn. in DC. Prodr. 14: 80. 1856.

Dry, sandy soil near the coast, from North Carolina to Florida.

5. POLYGONELLA MACROPHYLLA n. sp.

Perennial (?), stoutish, glaucous, glabrous. Stem solitary, erect, 8 dm. tall, simple below, branched above; leaves obovate or oblanceolate, 2-6 cm. long (sometimes shorter on the branchlets), obtuse, 3-5-nerved, leathery, exceeding the internodes except on the upper part of the stem; ocreae cylindric, slightly oblique, not pointed, increasing in length toward the upper part of the stem; racemes very dense, 2-3 cm. long, disposed in ovoid panicles; ocreolae funnelform, densely imbricated, slightly pointed; pedicels jointed at the middle; calyx (flowering stage not seen), the outer segments slightly accrescent, the inner developing wings; filaments subulate, somewhat dilated at the base; style 3-parted to

the base; wings oblong, 4 mm. long; achene 3-angled, narrowly oblong, acuminate at both ends, 4 mm. long, brown.

"Sandhills near the coast, Florida, A. W. Chapman."

Strikingly different from anything heretofore described in the genus but related to *Polygonella polygama*. It differs from all its relatives in its stout build, wand-like stem and remarkably large leaves for the genus.

6. *POLYGONELLA ARTICULATA* (L.) Meisn. Gen. 2: 228. 1836-43.

Polygonum articulatum L. Sp. Pl. 363. 1753.

Sandy beaches along the Atlantic coast from Maine to Florida and along the Great Lakes.

7. *POLYGONELLA AMERICANA* (F. & M.) Small, Mem. Torr. Club, 5: 141. 1894.

Gonopyrum Americanum F. & M. Mem. Acad. St. Petersburg. (VI.)

- 4: 144. 1840.

Polygonella ericoides Engelm. & Gray, Bost. Journ. Nat. Hist.

- 5: 230. 1847.

Polygonella Meisneriana Shuttlw.; Meisn. in DC. Prodr. 14: 81. 1856.

Sandy soil, Missouri to Georgia, south to Alabama and Texas.

With the two excellent specimens from which Meisner drew his original description, to compare with a generous supply of *Polygonella Americana* and observations in the field, I cannot separate *Polygonella Meisneriana* from *P. Americana*. There may be two species in what is now included in the latter species, but the separation must be on different lines.

THE GENUS WAREA.

I have always been impressed with the remarkably inconsistent descriptions that have been applied to the plant we have known as *Warea amplexifolia*. The discovery, by Mr. Nash, of a third species of *Warea* in western Florida renewed my interest in the group and led me to investigate it. The facts seem to be as follows: In 1822 Nuttall described *Stanleya? amplexifolia*,* founding the species on a specimen from eastern Florida. This plant had amplexicaul leaves. In 1834 Nuttall founded the genus

* Am. Journ. Sci. 5: 297.

Warea,* making the type a *Warea amplexifolia* founded on a plant from western Florida. This plant had sessile leaves, according to the author and his plate. Nuttall was not as shrewd as usual, and failing to see that his *Warea amplexifolia* was different from *Stanleya amplexifolia*, combined the original description of *Stanleya amplexifolia* with that of *Warea amplexifolia*; this blunder has been followed to the present day and consequently the ambiguous descriptions.

The plant from eastern Florida has been represented in our herbaria by good and ample specimens while only a few fragments of the west Florida plant seem to be extant, but now that we are furnished with excellent material the specific lines appear very distinct. I append a synopsis of the genus.

WAREA Nutt. Journ. Acad. Phila. 7: 83. *pl.* 10. 1834.

Key to the Species.

Leaves narrowly cuneate at the base; claws of the petals pectinate-fimbriate.

1. *W. cuneifolia*.

Leaves rounded or auricled at the base.

Leaves sessile, not auricled at the base; claws of the petals granular-toothed.

2. *W. sessilifolia*.

Leaves clasping, auricled at the base; claws of the petals serrulate.

3. *W. amplexifolia*.

1. WAREA CUNEIFOLIA (Muhl.) Nutt. Journ. Acad. Phila. 7: 84. 1824.

Cleome cuneifolia Muhl. Cat. 61. 1813.

Stanleya gracilis DC. Syst. 2: 512. 1821.

Cleome laevigata Soland.; DC. Syst. 2: 512. As synonym. 1821. Sand hills, Georgia to Florida, near the coast.

2. WAREA SESSILIFOLIA Nash, Bull. Torr. Club. 23: 101. 1896.

Warea amplexifolia Nutt. Journ. Acad. Phila. 7: 83. *pl.* 10.

1834. Not *Stanleya amplexifolia* Nutt.

Sandhills, West Florida at about 100 feet above sea-level.

3. WAREA AMPLEXIFOLIA (Nutt.)

Stanleya amplexifolia Nutt. Am. Journ. Sci. 5: 297. 1822.

Sand hills, East Florida, near sea-level.

CARDAMINE ARENICOLA Britton, Bull. Torr. Club, 19: 220. 1892.

This has been found by Prof. Scribner growing in sand and

* Journ. Acad. Phila., 7: 83. *pl.* 10.

shaly soil about Knoxville, Tennessee. It is also plentiful in the sandy summit of Little Stone Mountain, Georgia.

EUPHORBIA HUMISTRATA Engelm.; A. Gray, Man. Ed. 2. 386. 1856.

The known geographic ranges of the above species has lately been greatly extended southward by collections from Mississippi Professors. Tracy and Earle found it on Horn Island (2886) and at Biloxi (2913).

The name *Gatesia* cannot be applied to the Acanthaceous genus of the southern United States, with which it has lately been associated, having previously been used for an entirely different plant. I take pleasure in using in this connection the name of Prof. W. S. Yeates, State Geologist of Georgia, for while on his survey I first met this rare and peculiar species along the Flint river, in southwestern Georgia. Previously it had not been known to occur east of Alabama.

YEATESIA.

[*GATESIA* A. Gray. Proc. Am. Acad. 13: 365. 1878. Not Bertol. 1848.]

YEATESIA LAETE-VIRENS (Buckl.).

Justicia laete-virens Buckl. Am. Journ. Sci. 45: 176. 1843.

Rhytiglossa viridiflora Nees, in DC. Prodr. 11: 346. 1847.

Dicliptera Halcii Ridd. New Orleans Med. Journ. 1852.

Gatesia laete-virens A. Gray, Proc. Am. Acad. 13: 365. 1878.

Justicia viridifolia Buckl.; Nees in DC. Prodr. 11: 346. As synonym. 1847.

Tennessee to Georgia, Florida and eastern Texas.

VIBURNUM RUFOTOMENTOSUM.

Viburnum prunifolium var. *ferrugineum* T. & G. Fl. N. A. 2: 15. 1841.

Viburnum ferrugineum Small, Mem. Torr. Club, 4: 123. pl. 78. 1894. Not Raf. 1838.

Viburnum prunifolium is said to grow as far south as Mississippi and Florida, but during all my travels in the Southeast I have not met with the species. *Viburnum rufotomentosum* seems to replace our common plum-leaved *Viburnum* in the Southern States. The most southern station at which I have collected *V. prunifolium* is Salisbury, North Carolina.